WHAT IS CLAIMED IS:

1. A method for detecting a marker in an image, comprising the steps of:

selecting one of a first marker recognition process based on a normalized correlation and a second marker recognition process based on gray value histograms;

extracting image features associated with an input image of a ROI (region of interest); and

comparing the extracted image features with a trained model associated with the selected recognition process to determine if a marker is present in the input image.

2. The method of claim 1, wherein if the first marker recognition process is selected, the trained model comprises at least one template image and the step of comparing comprises the steps of:

normalizing the template image and input image with respect to brightness;

computing a correlation between the normalized template image and input image; and

determining that a marker is present in the input image if the computed correlation meets a threshold.

3. The method of claim 2, wherein the step of normalizing comprises computing $I(i) = \frac{(I(i) - \mu)}{\sigma}$, where ***I(i)*** is the gray value of pixel ***I*** and where μ and σ denote the average brightness and contrast, respectively.

4. The method of claim 2, wherein the step of computing a correlation comprises computing $\rho = \sum_{allpixels} I(i) * T(i))$ where ρ comprises the correlation coefficient, ***I*** comprises the input image, and ***T*** comprises the template image.

5. The method of claim 2, wherein the at least one template image comprises an image comprising a target marker, an image not comprising a target marker, and both.

6. The method of claim 2, further comprising the step of computing the template image from the average of a plurality of template images.

7. The method of claim 2, wherein the step of computing a correlation further comprises computing a correlation between at least one other normalized template image and the input image; and wherein the step

of determining if a marker is present in the input image is based on a maximum computed correlation.

8. The method of claim 2, further comprising the step of reducing the resolution of the input image and the template image by a predetermined factor prior to the comparing step.

9. The method of claim 1, wherein if the second marker recognition process is selected, the trained model comprises a sample image histogram comprising a gray value distribution of a sample image and the step of comparing comprises the steps of:

generating an input image histogram comprising a gray value distribution of the input image;

computing a distance measure between the input image histogram and the sample image histogram; and

determining if a marker is present in the input image based on the computed distance measure.

10. The method of claim 9, wherein the step of generating an input image histogram comprises generating a global histogram.

11. The method of claim 9, wherein the step of generating an input image histogram comprises generating a plurality of local histograms.

12. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for detecting a marker in an image, the method comprising the steps of:

selecting one of a first marker recognition process based on a normalized correlation and a second marker recognition process based on gray value histograms;

extracting image features associated with an input image of a ROI (region of interest); and

comparing the extracted image features with a trained model associated with the selected recognition process to determine if a marker is present in the input image.

13. The program storage device of claim 12, wherein if the first marker recognition process is selected, the trained model comprises at least one template image and the step of comparing comprises instructions for:

normalizing the template image and input image with respect to brightness; and

computing a correlation between the normalized template image and input image;

determining that a marker is present in the input image if the computed correlation meets a threshold.

14. The program storage device of claim 13, wherein the instructions for normalizing comprise instructions for computing $I(i) = \frac{(I(i) - \mu)}{\sigma}$, where ***I(i)*** is the gray value of pixel ***I*** and where μ and σ denote the average brightness and contrast, respectively.

15. The program storage device of claim 13, wherein the instructions for computing a correlation comprise instructions for computing $\rho = \sum_{allpixels} I(i) * T(i))$ where ρ comprises the correlation coefficient, ***I*** comprises the input image, and ***T*** comprises the template image.

16. The program storage device of claim 13, wherein the at least one template image comprises an image comprising a target marker, an image not comprising a target marker, and both.

17. The program storage device of claim 13, further comprising instructions for computing the template image from the average of a plurality of template images.

18. The program storage device of claim 13, wherein the instructions for computing a correlation further comprise instructions for computing a correlation between at least one other normalized template image and the input image; and wherein the step of determining if a marker is present in the input image is based on a maximum computed correlation.

19. The program storage device of claim 13, further comprising instructions for the step of reducing the resolution of the input image and the template image by a predetermined factor prior to the comparing step.

20. The program storage device of claim 12, wherein if the second marker recognition process is selected, the trained model comprises a sample image histogram comprising a gray value distribution of a sample image and the instructions for the step of comparing comprise instructions for:

generating an input image histogram comprising a gray value distribution of the input image;

computing a distance measure between the input image histogram and the sample image histogram; and

determining if a marker is present in the input image based on the computed distance measure.

21. The program storage device of claim 20, wherein the instructions for generating an input image histogram comprise instructions for generating a global histogram.

22. The program storage device of claim 20, wherein the instructions for generating an input image histogram comprise instructions for generating a plurality of local histograms.

23. A system for recognizing a marker in an image, comprising:

an image capture module for extracting image features associated with an input image of a ROI (region of interest);

an image processor comprising a first marker recognition processor for recognizing a marker in the input image based on a normalized correlation and a second marker recognition processor for recognizing a marker in the input image based on gray value histograms; and

a database comprising one of trained template images and trained histograms and a combination thereof, which are used by the image processor during a recognition process.

24. The system of claim 23, wherein the system is implemented in an automated placement system for detecting markers on printed circuit boards.